CASE REPORT

LAPAROSCOPIC CHOLECYSTECTOMY IN SITUS INVERSUS WITH LEFT-SIDED GALL BLADDER

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ABSTRACT
Situs inversus totalis is a rare congenital disorder occurring in 1:5,000 to 1:20,000 of the births. It may be partial, where the transposition is confined to either the abdominal or the thoracic viscera, or complete, i.e. involving both cavities. Change in anatomical position of organs gives rise to abnormal location of signs and symptoms, thus posing a difficulty in diagnosing the ailment, and also demands greater surgical skill. While there is no evidence to suggest that gall stones are more or less common in people with situs inversus, the presentation with left upper quadrant pain may delay the diagnosis of symptomatic gall stones. The approach in the operating room requires modification. We are reporting a case with complete situs inversus who presented with features of chronic cholecystitis and underwent laparoscopic cholecystectomy.
Key Words: Laproscopic Cholecystectomy; Situs Inversus Totalis; Cholelithiasis

Introduction

Situs inversus totalis is a rare congenital disorder occurring in 1:5,000 to 1:20,000 of the births.[1,2] Situs inversus is a morphological anomaly of positioning of the internal viscera. It may be partial, where the transposition is confined to either the abdominal or the thoracic viscera, or complete, i.e. involving both cavities.[3] There is a reversal of the usual 'handedness' of visceral topography which was known in animals since the days of Aristotle. The first case of situs inversus in humans was reported by Fabricius in 1600.[1] There is no current evidence showing increased incidence of cholelithiasis in patients with situs inversus totalis.[4]

Since Mouret performed first laparoscopic cholecystectomy in 1987, it has become a gold standard in treatment of cholelithiasis. The first known laparoscopic cholecystectomy in situs inversus has been reported by Campos and Sipes in 1991.[1] Due to the very nature of reversed anatomy, and possibility of associated anomalies, the procedure is technically demanding even for an experienced laparoscopic surgeon.[5]

Case Report

A 56 years-old woman presented with a 6 months' history of intermittent left upper quadrant colicky pain, radiating to the left scapular region, which is aggravated by fatty food. No other symptoms were present and abdominal examination was unremarkable. On chest examination, apex beat was found on the right side of chest. Liver function tests were normal. Abdominal ultrasonography revealed situs inversus with the liver and gall bladder lying on the left side and gall bladder, containing multiple calculi. Chest X-ray screening showed the heart to be on the right side. This suggested the possibility that this patient with situs inversus was suffering from gallstone colic. The patient was planned for laparoscopic cholecystectomy using standard four-port technique. Four ports on the left side of the abdomen were mirror images of those used for a right-sided gall bladder (Figure 1).

The approach in the operating room required modification. The surgeon and the first assistant were positioned on the right side of the patient and the second assistant on the left. A head-end-up and left-side-up positioning of the patient was adopted, to optimise views of the gall bladder and the Calot's triangle. A 4-port technique was used – an umbilical (10 mm), a medial epigastric (10 mm) and two lateral sub-costal (5 mm) ports (Figure 1)

A pneumo-peritoneum, to a pressure of 12mm of Hg, was created with a Veres needle inserted umbilical port incision (Port-1). A 30-degree telescope was inserted through a 10 mm port, and Initial inspection confirmed a left-sided liver and gallbladder. Another 10 mm-port was placed 4 cm below the xiphoid process and 1cm towards left of the midline (Port-2) and two lateral subcostal (5 mm) (port 3 and 4). A grasper inserted through port-4 was used to hold the fundus of the gall bladder and for its retraction. Being a right-handed surgeon, it was difficult

to dissect through port-2. We used port-3 to dissect and port-2 for retraction of the neck of the gall bladder. Using electrocautery, adhesions were separated and Calot's triangle dissection was done to bare the cystic duct. Application of clips through port-2 was again a challenge as the angle of the clip applicator through port-2 did not fit across the direction of the course of cystic duct and artery. The gall bladder neck was grasped with a tissue grasper introduced through port-2 and the gall bladder was dissected from the fossa with a hook passed through port-3. The postoperative period was uneventful and the patient was discharged in 48 hours (Figure 1).

Figure-1: Postoperative photograph of the patient's abdomen with dressings marking the port sites

Discussion

There are several important aspects of the management of gallstones, in patients with situs inversus that are worth highlighting. While there is no evidence to suggest that gall stones are more or less common in people with situs inversus, the presentation with left upper quadrant pain may delay the diagnosis of symptomatic gall stones.[2] It has been reported that about one third of the patients with situs inversus and symptomatic gall stones may, however, present with epigastric pain and about 10% of patients may present with right-sided pain.[6] Patients with situs inversus, who are scheduled for laparoscopic cholecystectomy, should be assessed pre-operatively for any potentially serious cardiac or respiratory abnormalities.

Due to the unusual orientation, while operating on a left-sided, gall bladder requires mental adaptability and manual dexterity to cope with any evolving difficult or potentially dangerous intra-operative situation. Laparoscopic cholecystectomy in patients with situs inversus, should be performed by an experienced laparoscopic surgeon. While there is no evidence to suggest that there is an increased risk of bile duct injuries in patients with situs inversus, the orientation and ergonomic challenges may result in an increased operative time.[7] Our total operating time was 30 min.

Positioning of the surgical team and port placements described in the literature are often a mirror image of the protocols used for conventional laparoscopic cholecystectomy. However, Right-handed surgeon standing on the right side of the patient, either crosses his hands, as in our case, to allow the right hand to operate through the epigastric port, or use the assistant to retract the Hartmann's pouch from the left side or, as we have described here, use the epigastric port to retract with the left hand, and operate with the right hand through the lateral subcostal port. Though laparoscopic cholecystectomy in such patients is technically more demanding, an experienced laparoscopic surgeon can perform it safely. Thus, situs inversus totalis does not appear to be contraindication to laparoscopic cholecystectomy.

Conclusion

Change in anatomical position of organs gives rise to abnormal location of signs and symptoms, thus posing a difficulty in diagnosing the ailment, and also demands greater surgical skill. While there is no evidence to suggest that gall stones are more or less common in people with situs inversus, the presentation with left upper quadrant pain may delay the diagnosis of symptomatic gall stones. The approach in the operating room requires modification.

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